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☛ SEE ALSO PAGES 158 & 159.

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Test Cards for Standard I.

No. 1.

Write—A fox and a cat met on the borders of a wood.

(1)	(2)	(3)
54	535	From 6,137
937	767	Take 3,290
463	665	
9	594	(4) From 832
894	777	Take 199

No. 2.

Write—Just as he said this, there was the cry of dogs in full chase.

(1)	(2)	(3)
463	849	From 2,002
895	768	Take 1,009
54	937	
9	463	(4) From 440
777	594	Take 44

No. 3.

Write—'I have but one trick,' said the cat.

(1)	(2)	(3)
647	895	From 9,136
765	493	Take 3,297
463	583	
849	964	(4) From 880
768	567	Take 88

No. 4.

Write—'What do you mean?' asked the bee.

(1)	(2)	(3)
888	909	From 6,060
96	880	Take 66
9	666	
777	39	(4) From 910
64	874	Take 419

No. 5.

Write—It was great fun to Kate to watch dog Tray.

(1)	(2)	(3)
735	909	From 715
492	94	Take 426
368	476	
497	83	(4) From 3,010
643	738	Take 1,919

No. 6.

Write—When you look at them, note their dress.

(1)	(2)	(3)
942	333	From 1,001
176	547	Take 119
647	754	
838	475	(4) From 453
999	838	Take 279

No. 7.

Write—Three men once came to a town in Spain.

(1)	(2)	(3)
368	947	From 101
947	711	Take 2
863	932	
472	317	(4) From 7,007
595	944	Take 708

No. 8.

Write—Little May said she would teach her dog too.

(1)	(2)	(3)
735	633	From 6,010
429	566	Take 4,011
638	899	
219	447	(4) From 712
907	668	Take 524

No. 9.

Write—Then May would say, 'Sit up and beg!'

(1)	(2)	(3)
682	538	From 5,050
359	246	Take 55
746	873	
349	469	(4) From 3,191
827	237	Take 2,792

No. 10.

Write—Oh! call my brother back to me!

(1)	(2)	(3)
542	99	From 812
898	44	Take 357
695	594	
595	440	(4) From 4,203
426	513	Take 1,906

No. 11.

Write—When Spring comes how glad we all are!

(1)	(2)	(3)
767	6	From 505
89	18	Take 55
8	493	
46	87	(4) From 3,101
989	9	Take 1,909

No. 12.

Write—Go and ask our uncles and cousins to come and help us.

(1)	(2)	(3)
642	873	From 726
927	496	Take 534
536	87	
948	9	(4) From 1,022
372	697	Take 936

No. 13.

Write—Fred Jones was a little boy who was fond of mice.

(1)	(2)	(3)
9	478	From 912
27	997	Take 746
468	684	
98	297	(4) From 3,103
6	338	Take 1,197

No. 14.

Write—In old Rome there were many slaves.

(1)	(2)	(3)
777	353	From 321
44	676	Take 196
999	989	
68	452	(4) From 3,114
496	238	Take 1,096

No. 15.

Write—Just as he entered the cave he heard a lion roar.

(1)	(2)	(3)
438	66	From 3,104
379	6	Take 1,906
683	666	
974	66	(4) From 714
836	666	Take 429

No. 16.

Write—'It looks and walks like a king,' said Ted Dee.

(1)	(2)	(3)
838	357	From 7,117
88	684	Take 5,118
8	891	
88	468	(4) From 535
888	996	Take 46

No. 17.

Write—'There is the light,' said a boy in a boat.

(1)	(2)	(3)
739	818	From 404
86	97	Take 145
476	657	
95	438	(4) From 1,012
783	291	Take 925

A Course of Object-Lessons and Elementary Science.

(Adapted to the Syllabus of the New Code and of the London School Board.)

BY RICHARD BALCHIN.

Head Master under the School Board for London.

Continuing the outlines of lessons for Standard II. we have :—

Useful Materials from the Animal Kingdom :—Leather.

6. Have on the table specimens of leather, a piece of ox skin or hide with the hair still on it, a picture of a tanyard, and, if possible, specimens of the implements used; also a piece of hard dry skin with the hair on it.

Hold up the piece of ox skin, and a piece of stout leather. Talk about them. Note how the one differs from the other. Do the same with a piece of pliable leather and the hard dry skin. If a piece of new skin be left in a damp place, it becomes bad and putrid; if in a dry place, hard and stiff. Describe the three layers or parts of skin, viz., the outer containing the hair, the inner or fleshy, fatty part, and the middle or true skin. The true skin becomes leather. The work of converting the true skin into leather is called tanning. Notice the various operations (1) washing the skin; (2) soaking in lime-and-water pits for several days; (3) the scraping off the outer skin with the hair by the beam-man; (4) again washing the skin; (5) the scraping off the inner, soft, fleshy part; (6) the soaking in 'tan pits' of the hides which now consist of the true skin only; (7) the hanging up to dry; (8) the work of the 'currier' in scraping off all inequalities so as to get a level, smooth surface and, finally, the 'black-sizeing.'

Useful Materials from Animals :—Bone, Ivory, Horn.

7. Have specimens of bone, both raw and prepared; ivory, and some articles made of ivory; horn; tortoise-shell and some combs. Pictures of any animals with horns or tusks.

Carry on a conversation about the pictures and get the boys to identify the specimens. Talk about the cart-loads of bones going from the butchers' shops. What is going to be done with these? Knife-handles, spoons, knitting needles, buttons, etc. Note some of the operations. Boiled to get out the grease. Roughly shaped and sent to Sheffield to be made into the above articles. The small cuttings, shavings, and saw-dust, used as manure. Ivory, the tusks and teeth of elephant, walrus, etc., made into artificial teeth, handles of umbrellas, billiard balls, and many small ornaments. Chinese and Japanese very clever ivory carvers. Horns of ox, goat, sheep, etc. These horns grow upon a kind of core of bone. Horns are first soaked in water for about four weeks, then are easily worked. Made into combs, cups, buttons, etc.

Useful Materials from Animals :—Wool and Silk.

8. Have ready specimens of wool in its various stages, from the raw state to the woven cloth. Pictures of sheep, sheep washing, and shearing.

Explain spinning and weaving, or the manufacture of the raw wool into 'thread' or yarn, and the interlacing of the threads to form a cloth. English wool has long and coarse fibres, and is made into worsted goods, such as flannel and merino. Australian wool has short and very fine fibres, and is made into various kinds of broadcloth for gentlemen's coats, etc.

Show the picture of the silk-caterpillar and its moth. Silk-*worm* is a wrong name. Talk about the picture and give an outline of the manufacture.

Useful Materials from Vegetables :—Cotton.

9. Have ready the box of specimens of cotton; from the cotton in the pod to the woven piece of calico. Picture of the cotton plant. Talk about articles of clothing made of cotton. Show a piece of cotton or calico, and a pod of cotton seeds with the fibres forming a padding. Wonder how the one can be made from the other. Describe the plant and then the cotton fields of India, China, or the United States. The kind of labourers who work in them, and the packing in bales and arrival at Liverpool. Show a handful of raw cotton and briefly explain the main operations by which the raw cotton is spun into thread, viz. :—'Willowing' by which the fibres are separated from each other and cleared of dust. 'Carding' by which the fibres are laid parallel to each other; then pass on to the 'spinning' machine, by which continuous lengths or ropes of fibres are spun into yarn or thread. The thread is wound upon wheels, and is ready for the weaver.

Useful Materials from Vegetables :—Flax and Hemp.

10. Have pictures of the flax and hemp plants. Bundles of flax and hemp. Bottles of linseed and hempseed, and of linseed oil. A piece of linen, and some string and rope; some of the rope tarred, and some white (manilla). (Note: the tar used is Stockholm tar, obtained from pine trees, and not coal tar, which is a chemical product and would rot the ropes.) Describe the flax plant with its blue blossoms; it is the stem which furnishes the flax-fibres. When the leaves of the ripe plant fall off the yellow stems are pulled by hand and dried in the sun; the seeds being carefully collected. The stems are then steeped in water and rolled, then again dried; the inner or woody part of the stem is then removed, for it is, of course, only the bark which yields the fibre. The mass of fibre goes through similar operations to those of cotton to produce the yarn or thread which is woven into linen. The yarn from the hemp plant is twisted into string and ropes. The yarns are twisted into strands; three strands twisted make a rope, and three ropes twisted make a cable.

Useful Minerals :—Iron.

11. Have specimens of iron ore, pig-iron, a piece of cast-iron, wrought-iron, limestone, iron wire, and a picture of a blast-furnace. Show a block of blackband iron ore, or of clay band, and along with them a bright

knife or other piece of cutlery, and set the boys wondering that out of such an apparently dirty, useless lump of stone, there should be obtained the material of the bright steel knife. Briefly describe the processes in the transformation, leaving out of consideration for the present the chemistry of the work. The blackband is piled in heaps in the open air, and gently roasted with small coal, to drive off some of the impurities, then thrown into the blast-furnace along with lime and coal. A tremendous heat is generated and the pure iron melts out of the ore, falls to the bottom of the furnace, and is then run out into grooves made in a sandy floor. Another process is required to convert the pig-iron into steel; but reserve this for a higher standard. Note the difference between cast and wrought iron, and get the boys to name the various articles at home or in the school which are made of each kind of iron, and why.

Other metals will form subjects for the next four lessons, such as gold, silver, copper, and lead; all to be treated in the same simple manner as iron. I need not, however, give notes of these lessons, as the same subjects will be treated more fully later on.

(To be continued.)

—o—

PUPIL TEACHERS' LATIN COURSE.

BY L. HUXLEY, B.A.,

Classical Master Charterhouse School.

This New Latin Course (specially written for Scholarship Candidates) was begun in our issue of February 7th (No. 4., vol. XI.).

Decline like *pŭĕr: sŏcer*, father-in-law; *gĕner*, son-in-law; *Lĭber* (the god Bacchus) *lĭbĕrī*, children; *vespĕr*, the evening star; *jūgĕrum*, acre (in pl. 3rd decl.).

like *ăgĕr, ăper*, boar; *austĕr*, S.E. wind; *cancer*, crab; *capĕr*, goat; *făbĕr*, workman (g. pl. *fābrum* in special phrases, as *praefectus fabrum*, chief of the engineers); *măgister*, master; *mĭnister*, servant.

Adjectives.—1. Keeping the ĕ, like *pŭĕr: aspĕr*, rough, harsh (f. *aspĕrā*, n. *aspĕrum*); *lăcĕr*, torn; *lĭbĕr*, free; *mĭser*, wretched; *tĕnĕr*, tender. Also compounds of more than two syllables ending in *fer* and *ger*, as *armĭger*, arm-bearing; *mortĭfer*, death-bringing.

2. Dropping the e, as *ager: ægĕr*, sick (f. *ægrā*, n. *ægrum*); *ātĕr*, jet-black; *erŭber*, frequent; *nĭger*, black; *integĕr*, whole; *pulchĕr*, beautiful; *rŭbĕr*, red; *sacĕr*, sacred; *sinistĕr*, on the left-hand; *noster*, our; *vester*, your.

3. *Dextĕr*, on the right-hand, is declined either way.

4. The pronouns *alŭtĕr*, one of two, and *ŭtĕr*, which of two? and their compounds, also keep the ĕ, but have special forms in G. and D. Sing. (They are declined after Ex. 26.)

Exercise XIV. (ero- stems.)

1. Dŏŏ puĕrī cervum per diem tōtum sĕcūtī, sub vesperum, praedā āmissā, in lūcum magnum vēniēbant. 2. A dextrā crāt templum pulchrum deī sylvānī, lignō rŭbrō et nigrō factum. 3. Dum hōc spectant, ā sinistrā āpĕr sētīs aspĕr vīsŭs est. 4. Crēbrīs oppugnant tēlīs (n.); quōrum ălīquae (n.) āprum vulnĕrant, et in tergō latō haerent. 5. Apĕr impetum făcĕrĕ pārābăt, cum vīr ex templō vēniēbăt. 6. 'Hīc āpĕr,' inquīt, 'deō sācĕr est. 7. 'Si stătim ābībĭtīs, vōbīs non nŏcēbĭt.'

Translation.—1. Two boys having followed a stag through a whole day, towards evening, their prey being lost (abl. abs. See Ex. xi. 3.), came into a large grove. 2. On the right (sc. 'hand.' which is fem. in Latin) was the beautiful temple of the woodland god, made of red and black wood (*ligno*, abl. of material). 3. While they look at this, a boar, rough with bristles (*sēta*), was seen on the left. 4. They attack it with many darts, of which some wound the boar and stick in his broad back. 5. The boar was preparing to make a charge (*impetus*, acc. *-um*, is of 4th decl.) when a man came out of the temple. 6. 'This boar,' he said, 'is sacred to the god. 7. 'If you will go away, at once, he will not harm you' (*nŏceo* + dat.).

Retranslate into Latin.—1. A boar once (*quondam*) was walking (*ambŭla-*) on the sea (*maritimo- a-* adj.) shore. 2. There with hurrying (see list) feet (*ungŭla-*) he crushed (*ēlīd-*) a large number (see list) of small (*parvo-*) crabs. 3. The largest crab, the grandfather (*āvo-*) of the rest, wished to take-vengeance (*vindĭca-*) upon him (*in* + acc. *eo-*). 4. Having-lain-in-wait (*insĭdia-* deponent) for a long time (*diū*), at last (*tandem*) he sees the boar approach (*adpropinqua-*) the shore, following (*sĕcuto-* dep.) the road (*via-*) from (*ex*) the fields. 5. The boar enters (*intra-*) the water; washes (*lava-*) his feet, finally (*dēnĭquĕ*) plunges in (*immerg-*) his snout (*rostro-* neut.), in the hope of catching (*capiendo-*) crabs.

Exercise XV.

1. At puĕrī mandātīs vīrī non pārent. 2. Uterquĕ tēlum conjĭcit; impĕtum stătim făcit āper, ŭtrumque sternīt. 3. Strātōs tămen relinquit, ănĭmō enim magnō sunt āprī nĕquĕ strātō altĕrum făciunt impĕtum. 4. Puĕrī tandem sē hŭmō lĕvant; intĕgrīsquĕ membrīs, făcĭlĕ tămĕn lăcĕrā, et tŭnĭcīs lūtō nĭgrō foedātīs, per tĕnĕbrās lūcī dōmum moestī rĕdeunt.

Translation.—1. But the boys do not obey the man's orders. 2. Each throws a dart; the boar immediately makes a charge; (and) knocks down both (of them). 3. However he leaves them when fallen, for boars are great-souled, and do not make a second attack upon a fallen man. 4. The boys at last raise themselves from the ground; and with unbroken limbs, yet with torn face and coats soiled with black mud, return home sadly through the darkness of the grove.

(1. *Pāreo*, I obey + dat. 2. *Uterquĕ*, compound of *uter*, each (of two) = both. The pl. would mean 'both parties.' 4. *Tĕnĕbrās*, only used in pl.; *dōmum*, used always without a prep. '*ad*'; *moesti*, adj., Eng. uses adv.)

Retranslation.—1. Then our crab, rushing out (*exorto-* dep.) from his ambush (*insidia-* pl.) catches hold of (*prehend-*) the lips (*labro-* n.) of the boar. 2. The boar can neither open (*dĭĕri-*) his lips, with the crab fastened-on-them (*adfixo-*) nor shake off (*excūtĕre*) the crab. 3. Accordingly (*ĭtăque*) he runs-for-help (*confŭgĭ-*) to (*ad*) a man, who, with (*cum* + abl.) his (*suo-*) father-in-law and sons, was working (*lăbŏra-*) in the fields not far-off (*prŏcŭl*).

Exercise XVI.

1. Puĕrīs prīmum labrā lăcĕrā et cancrum lābrīs adfixum monstrāt āpĕr; hī cētĕrīs monstrant, nam cancrum tangĕrĕ tĭmēbant. 2. Sed vīrī, ārātrō rĕlictō, cum vīdent aprum ita impĕdītum, praedam jam sībī pārātam esse pŭtant. 3. Dŏlābrīs sublātīs, sīmŭlant sē cancrum excussūrōs esse; tum, signō intĕr sē dātō, aprum collō fĕriunt dŏlābrīs mortĭfĕrīs. 4. Cancrum cum aprō āquā călĭdā cŏquunt. 5. Ită cancĕr, aprum ultŭs, ipse occĭdīt, et ā vīrīs consumptŭs est.

Notes for Translation.—Puĕrīs, dat. of ind. obj.; *monstrāt* being singular, *lābrā* cannot be the nominative; *monstra-*, to show; *lābrīs*, dat. of ind. obj. after *adfixum*, which agrees with ——? *hī*, n. pl. of *ho-* (*hic, haec, hoc*), dem. pron. *this*, referring to a masc. pl. subst.; *cetĕrīs*, same construction as *puĕrīs*; *tangĕrĕ*, touch; *tĭmēbant*, fear.

2. The principal verb is *pūtant, vident* being subordinate in the *cum* (when) clause. The subj. of both is ——? *Arātro relicto*, abl. abs.; *rĕlicto*, pf. part. pass. of *relinqu-*, leave; *implĭtum*, embarrassed; *praedam —— esse*, infin. clause = direct obj. of *pūtant*, think; *praeda* (see Ex. xiv. 1); *sĭbi*, dat. of *se*, for himself or themselves; *pārātam*, prepared.

3. *Dōlābra-*, a bill-hook; *sublātīs*, lifted, constr. = abl. abs.; *sīmŭla-*, pretend; *sē...esse*, inf. clause, object of *sīmŭlant*; *excussūrōs*, pst. part. of *excŭtio*, knock off. Tr. 'that they are going to...' *tum*, then. *Signo-* (n.), signal; *dătō*, pf. part. pass. *da-*, give. Construction? *Inter se*, 'to one another': lit., among themselves; *collō*, neck, abl. = place at which; *feri-*, strike; *dolabrīs*, instrumental abl.

4. *Cum* + abl. = with; *calidā*, hot; *coqu-*, boil.

5. *Ultus*, pf. part. dep., from *ulc- isc-*, punish; *occīdit*, die; *ā vĭrīs* — the preposition is always used with the abl. of the agent (a person), but not with the abl. of the instrument (a thing); *consumptus*, eaten, with *est* = pf. passive.

DECLENSION OF PERSONAL PRONOUNS.

		1st Person.	2nd Person.	3rd Person.
Sing.	N.	ĕgō	tu	none
	Acc.	mē	tē	sē or sē sē
	Gen.	(meī)	(tuī)	(suī)
	Dat.	mĭhĭ, mī	tĭbĭ	sĭbĭ
	Ab.	mē	tē	sē
Pl.	N.	nōs	vōs	no separate
	Acc.	nōs	vōs	forms
	Gen.	nostrum	vestrum	
	Abl.	nōbīs	vōbīs	

1. Genitive Case. As *possessive*, the adjectives mĕus, tuus, suus are always used. Meī (lit. *of my* being), tuī, suī are only used as Objective Gen. Similarly in pl. the adjectives noster, vester are the possessives; nostrī, vestrī, objective; nostrum, vestrum, partitive (rarely objective).

(To be continued.)

—o—

PUPIL TEACHERS' TEST EXAMINATION.

FIRST YEAR. (Morning Paper.)

Directions, etc.:

(1) At the head of every sheet the index number of the Pupil-Teacher must be written in Largehand, together with the Year of Apprenticeship and Month of Government Examination, but no other identifying mark.

(2) Flat rulers must not be used. Any attempt to obtain clandestine assistance will be punished by immediate exclusion from the examination.

(3) Three hours and a half are allowed for this paper.

(4) Not more than three questions in each subject are to be answered. Pupil-Teachers about to be examined in April must not answer more than two questions out of the first four.

Arithmetic. (BOYS.)

(Answer *three* questions only.)

1. Simplify—

$$\frac{2\frac{1}{2} - \frac{5}{8}}{2\frac{1}{2} + \frac{5}{8}} + \frac{29\frac{1}{2}}{4} + \frac{2\frac{5}{16}}{\frac{3}{8}} \qquad \text{(25 marks.)}$$

2. State the rule for finding the decimal point in Division of Decimals.

Divide 586·25 by ·000625; 2873·75 by ·0375, and 7·203 by 299·7 until the quotients terminate or recur. (40 marks.)

3. Subtract $\frac{1}{16}$ of £8 1s. 2d. from 0·125 of £813 7s. 6d.; and find by what decimal the result must be multiplied to produce £10 9s. (35 marks.)

4. What fraction of 50 yards 2 feet 10 inches is 29 yds. 4 inches? (30 marks.)

5. Prove that $\frac{5}{8} = \frac{15}{24}$. What fraction of a guinea together with £4 2s. 6d. is equivalent to £5·7. (40 marks.)

6. Find the cost of $6\frac{1}{16}$ tons of hay at the rate of $£3\frac{1}{16}$ for $1\frac{1}{4}$ tons. (30 marks.)

(GIRLS.)

(Answer *three* questions only.)

1. Find by practice the cost of 6 cwt. 3 qrs. 21 lbs. at £15 per ton, and explain by what other method besides practice this calculation could be made, and what is the advantage of doing it by practice. (40 marks.)

2. A woman has to pay four bills—the butcher's, for 13 lbs. of meat at 11½d. per lb.; the grocer's, for 12 lbs. of sugar at 2¾d. per lb., and 1½ lbs. of tea, at 2s 7½d. per lb.; the milkman's, for 7 quarts of milk at 3¾d. per quart, and the baker's, for 9½ quartern loaves at 5½d. per loaf.

Make out the account for the whole and find the sum remaining out of £1 10s. which she had in her purse. (25 marks.)

3. Work out these calculations by the simplest processes known to you:—

What will 67 umbrellas cost at 3s. 4d. each?
What is the worth of 97 half-crowns?
If there is 19s. 11½d. in each of 8 boxes, how much is there in all?
Find the cost of 61 books at 9½d. each. (35 marks.)

4. Simplify $3\frac{1}{2} + 4\frac{1}{16} + 7\frac{1}{8} + \frac{3}{16} - 44\frac{1}{4}$. (30 marks.)

5. A person spending $\frac{1}{8} + (\frac{1}{4} - \frac{1}{8})$ of his money has £19 left. How much had he at first? (30 marks.)

6. Find the greatest common measure of 2261 and 3213, and prove by the steps of your working that no other number can be the greatest common measure. (40 marks.)

Grammar.

(Answer *three* questions only, including 1 and 2.)

1. But oars *alone* can ne'er *prevail*
To reach the distant *coast*.
The breath of heaven *must swell* the sail
Or *all* the *toil is lost*.

Parse the italicised words. (30 marks.)

2. Say how many sentences there are in the foregoing extract, and what are their subjects, predicates, and other parts. (20 marks.)

3. State, giving one illustration of each, the rules for the comparison of adjectives. Give also six adjectives that cannot be compared. (20 marks.)

4. What is the meaning and use of the final syllable in each of the following words:—

Soften, Golden, Oxen, Shepherdess, Goodness, Gracious, Manhood, Kingdom? (30 marks.)

5. What are Abstract Nouns, Relative Pronouns, and Transitive Verbs? Give two examples of each, and place them in sentences. (20 marks.)

6. Name the interrogative pronouns, and state which of them are used both substantively and adjectively, and which only substantively. Give examples. (30 marks.)

Geography.

(Answer *three* questions only, including 2 *or* 4.)

1. Name four of the principal ports of England, Scotland, and Ireland respectively. Point out their positions and their chief exports. (20 marks.)

2. Draw a map embracing the basins of the Clyde, Forth, and Tay, or the Irish Sea and St. George's Channel, showing the mouths of the influent rivers. (30 marks.)

3. Name the English coalfields, and the chief towns on each, with their manufactures. (25 marks.)

4. What are the chief uses of mountains? (25 marks.)

5. State the position as accurately as you can, and say what you know of each of the following:—Rockhampton, New Westminster, Valentia Island, Oban, St. Andrews, St. Albans. (20 marks.)

6. Name the provinces of the Canadian Dominion, and give also the principal towns and chief industry of each. (25 marks.)

Penmanship. (40 marks.)

Write in Largehand the word 'Apprehensive,' and in Smallhand 'Metropolitan Streets' Improvement Act.'

FIRST YEAR. (Afternoon Paper.)

(*Two hours and a-half allowed.*)

Needlework. (60 marks.)

(One hour allowed.)

1. Show on a piece of stocking-web how you would mend a hole on the knee of a stocking (common darn). Cast on 15 stitches, and with two knitting pins knit 15 rows, showing seam-stitch, and two decreasings, as for the back of a stocking leg.

2. With your piece of calico, 9 inches square, make an apron showing hemming, tucking, gathering, setting-in, stitching, button and button-hole.

History.

(Answer *three* questions only.)

1. Mention the principal roads and walls made by the Romans. (30 marks.)

2. Name some distinguished writers who flourished in Northumbria during the Heptarchy. (25 marks.)

3. Point out the special circumstances most worthy of record in the history of three of the following:—Athelstan, Offa, Godwin, Bede, Augustine. (25 marks.)

4. What do you know of the military enterprises and administration of Julius Agricola? (20 marks.)

5. Give a short account of the reign of '*The Confessor*.' (25 marks.)

6. What are the following years memorable for:—B.C. 54, A.D. 410, 827, and 878? (30 marks.)

Composition. (40 marks.)

Write from memory the substance of the passage read to you by the examiner.

SECOND YEAR. (Morning Paper.)

Direction, etc.:

(1) At the head of every sheet the index number of the Pupil Teacher must be written in Large hand, together with the Year of Apprenticeship and Month of Government Examination, but no other identifying mark.

(2) Flat rulers must not be used. Any attempt to obtain clandestine assistance will entail immediate exclusion from the examination.

(3) Three hours and a half are allowed for this paper.

(4) Questions marked with asterisk (*) are for October Pupil-Teachers only.

Euclid. (Boys.)

(Do not use +, −, ×, or any other symbol of operations. Answer *two* questions only.)

1. On the same base, and on the same side of it, there cannot be two triangles that have their sides which are terminated at one extremity of the base equal to one another, and likewise those which are terminated at the other extremity equal to one another. (20 marks.)

*2. To draw a straight line at right angles to a given straight line from a given point in the same. (30 points.)

3. At a given point in a given straight line to make a rectilineal angle equal to a given rectilineal angle. (20 marks.)

4. Given the base, sum of the other sides, and one of the base angles, to construct the triangle. (30 marks.)

Arithmetic. (Girls.)

(Do *three* questions only.)

1. After cutting away $\frac{1}{7}$ of a cake and $\frac{4}{9}$ of the remainder, there is left $3\frac{1}{2}\frac{1}{4}$ lbs. What was the weight of the whole cake? (30 marks.)

*2. Find the value of $3\frac{3}{4}$ of £7 12s. 3d. + $5\frac{1}{3}$ of £1 2s. 9d. − $5\frac{1}{8}$ of £3 3s. $8\frac{3}{4}$d. (40 marks.)

*3. Write the following fractions and fixed numbers decimally, and find their sum:—

$\frac{888}{1000}$, $\frac{444}{100}$, $76\frac{333}{10000}$, $\frac{1}{88}$. (30 marks.)

4. Simplify the following:—

$\frac{4}{33}$ of $1\frac{3}{4}$ − $\frac{1}{11}$ of $3\frac{3}{8}$ of $\frac{8}{21}$ + $\frac{3}{110}$. (25 marks.)

5. State the rule for converting vulgar fractions into decimals, and *explain* it by applying it to the fractions $\frac{1}{16}$, $1\frac{7}{125}$. (40 marks.)

6. Find the number of feet in $\frac{4}{15}$ of a mile + $\frac{1}{3}\frac{3}{2}$ of a furlong − $11\frac{1}{2}$ poles. (30 marks.)

English.

(Answer Questions 1 and 2, and two others.)

1. Paraphrase this passage:—

By torch and trumpet *fast* arrayed
Each horseman drew his *battle* blade,
And furious every charger *neighed*
To join the dreadful revelry.
Then *shook* the hills with thunder riven;
Then rushed the steed to battle driven;
And *louder than* the bolts of heaven
Far flashed the red artillery.

(45 marks.)

2. Analyse the last four lines, and parse the italicised words. (40 marks.)

3. What is the meaning of sub-, pre-, and re-, used as prefixes? Give three examples of each, and show the meaning of each part of the compounds you give. (35 marks.)

*4. What is meant by Case in English grammar? How many Cases are there? Give some examples in which the Case of a Noun or Pronoun is known by its form, and others in which the Case is known by considering its meaning or relations. (35 marks.)

5. Explain the use and meaning in Grammar of the words *Abstract*, *Transitive*, *Apposition*, *Concord*, *Demonstrative*, and give an example illustrating each. (35 marks.)

6. Show by examples that the words *since*, *but*, *except* may each be used as different parts of speech. (35 marks.)

Geography.

(Answer *three* questions only, including the first.)

1. Draw a map of—

(*a*) Italy, *or* (*b*) France, *or* (*c*) the basin of the Ganges. (35 marks.)

*2. Describe the positions of Rome, Venice, Belgrade, Sebastopol, Dresden, and Cork. (25 marks.)

3. Name some of the principal animals, trees and fruits, which are not found in England, but are to be met with *either* in (*a*) India *or* (*b*) Australia. (20 marks.)

4. Name the islands, river mouths, and towns of the Baltic Sea. (20 marks.)

5. Explain the terms 'meridian of longitude,' 'great circle,' 'Arctic circle,' and show how in going round the world from west to east a day is apparently gained. What is the difference in time for each degree of longitude? (25 marks.)

6. Write Notes of a Lesson on 'The Races of Europeans.' (25 marks.)

Penmanship. (40 marks.)

Write in large-hand the word '*Approximately*,' and in small-hand '*The ploughman homeward plods his weary way.*'

SECOND YEAR. (Afternoon Paper.)

(*Two hours and-a-half allowed.*)

Needlework. (GIRLS.) (60 marks.)

(*One hour allowed.*)

1. With your piece of calico, show how you would put a gusset in the wrist or hip of a shirt.

*2. Put on a print patch to measure two inches when finished.

Arithmetic. (BOYS.)

(Answer *three* questions only.)

1. If 120$\frac{4}{5}$ bushels of oats feed 8 horses for 13$\frac{1}{2}$ days, how long will 26 horses take to consume 682$\frac{1}{2}$ bushels? (35 marks.)

2. In what time will £78 6s. 8d. amount to £83 9s. 5$\frac{1}{2}$d. at 3$\frac{1}{2}$ per cent. per annum simple interest? (40 marks.)

*3. Calculate the simple interest on £3,012 10s. for three years and four months at £4 10s. per cent. (25 marks.)

*4. A man would lose 17$\frac{1}{2}$ per cent. by selling a house for £5,775; what must he sell it at to gain 15 per cent.? (35 marks.)

5. A man invests $\frac{3}{4}$ of a sum of money in 5 per cent. railway debentures at 120, and puts the rest out at 4 per cent. interest. Find the average return he gets per cent. for his money. (25 marks.)

6. A man spends 4 per cent. of his money, and then 5 per cent. of the remainder. What per cent. of the original sum has he left? (25 marks.)

History.

(Answer *three* of these questions.)

1. Give the dates of the Constitutions of Clarendon, Magna Charta, and the Provisions of Oxford, with the circumstances under which they were agreed to. State the principal provisions of any *one* of them. (30 marks.)

2. With what objects were the Crusades undertaken? What share did any of our English Princes bear in them? (20 marks.)

*3. Trace the descent of Henry II. from William the Conqueror. (20 marks.)

*4. What were Edward the First's relations with Scotland? (30 marks.)

5. Give a short account of Simon de Montfort. (20 marks.)

6. Mention the chief battles of the Wars of the Roses, giving the names of the generals, and the results. (30 marks.)

Teaching.

(Answer *two* questions only. Forty marks are given for this paper, but eighty more are awarded for practical skill.)

1. Make some mental exercises on *money* suited for the First and Second Standards, and let them be as varied in form as possible. (20 marks.)

*2. Arrange the letters of the alphabet in the order of their difficulty for the teaching of writing. (20 marks.)

3. What objections may be urged against the teaching of reading on the principle of imitation? (20 marks.)

4. Draw up an orderly list of a dozen words which present difficulties of spelling on account of silent letters. (20 letters.)

THIRD YEAR. (Morning Paper.)

Directions, etc.:—

(1) At the head of every sheet the index number of the Pupil-Teacher must be written in Large-hand, together with the Year of Apprenticeship and Month of Government Examination, but no other identifying mark.

(2) Flat rulers must not be used. Any attempt to obtain clandestine assistance will entail immediate expulsion from the examination.

(3) Three hours and a half are allowed for this paper.

(4) Questions marked with asterisk (*) are for October Pupil-Teachers only.

Euclid. (BOYS.)

(Answer *two* questions only. Do not use +, −, ×, or any other symbol of *operations*.)

1. If a straight line falling on two other straight lines make the alternate angles equal to one another, these two straight lines shall be parallel. (20 marks.)

*2. The exterior angle of a triangle is equal to the sum of the two interior and opposite angles. (30 marks.)

3. ABC is a triangle, and the square on BC is equal to the two squares on AB and AC. Show that BAC is a right angle. (20 marks.)

4. MNO is a triangle, P and Q are the middle points of NM and NO respectively. Show that PQ is half of NO. (30 marks.)

Algebra. (BOYS.)

(Answer *three* questions only.)

1. Prove that $a^m \times a^n = a^{m+n}$, where a, m, n are any positive integers.

What is the cost of carpeting a room p feet long, q yards broad, at r shillings per square yard? (20 marks.)

2. Simplify—

(*a*) $\dfrac{x+y}{2(x-y)} - \dfrac{x-y}{2(x+y)} - \dfrac{2y^2}{x^2-y^2}$ (7 marks.)

(*b*) $\dfrac{x+3}{x^2-7x+12} - \dfrac{x+4}{x^2-6x+8} \div \dfrac{x+4}{x^2-5x+6}$ (8 marks.)

*3. Find the G.C.M. of $6x^5 - 4x^4 - 11x^3 - 3x^2 - 3x - 1$ and $4x^4 + 2x^3 - 18x^2 + 3x - 5$. (20 marks.)

4. Extract the square root of $x^2(9 + 4y^2 + 12y) - 24xy + 16y^2(1 - x)$. (15 marks.)

5. If eggs per dozen cost 50 per cent. less than butter per lb., and for 12 dozen eggs and 20 lbs. of butter I pay £1 6s., find the cost per dozen of eggs. (15 marks.)

Mensuration. (BOYS.)

(Answer *one* question only.)

*1. A ladder 41 feet long stands upright against a wall. How far will the top fall by drawing out the bottom 9 feet?

2. ABCD is a trapezium. The diagonal BD = 20 chains 75 links, and the perpendiculars on it from A and C are 15 chains 35 links, and 18 chains 75 links respectively. Find in acres the area of the trapezium.

3. Compare the area of the triangle whose sides are 17, 105, 116 with the area of the right-angled triangle whose sides are 28, 45 and 53.

Arithmetic. (GIRLS.)

(Answer *three* questions only.)

*1. Simplify the fraction—

$$\left\{\frac{7\frac{1}{2}+5\frac{3}{5}}{7\frac{1}{2}-5\frac{3}{5}} - \frac{7\frac{1}{2}-5\frac{3}{5}}{7\frac{1}{2}+5\frac{3}{5}}\right\} \div \frac{24}{77}.$$ (30 marks.)

2. Find the value of 3·125 of £9 4s. 6d. − ·05 of £17 6s. 3d. + 5·136 of £3 9s. 8d. (30 marks.)

*3. Write out the rules for the conversion of circulating decimals to vulgar fractions, and give examples. (35 marks.)

4. If a metre measures 39·37 inches, how many metres are there in 49$\frac{1}{10}$ miles? (30 marks.)

5. Divide £33 2s. 9d. into parts having the ratio 15 : 10 : 8. (40 marks.)

6. If 25 men can reap a field of 4 acres in 3$\frac{1}{2}$ hours, how many men would be required to reap it in 6$\frac{3}{4}$ hours? (30 marks.)

Penmanship. (40 marks.)

Write in Large-hand the word '*Gamopetalous*,' and in Small-hand '*Sweet sleep that makes more short the night.*'

(To be continued.)

THE METRIC SYSTEM, AND HOW TO TEACH IT.

BY CHAS. BOWDEN.

Work for the Fourth Standard.

Write down the figure 1 on the blackboard, and ask its value. Put down another 1 beside it, making the number 11. Now ask the *value* of the second 1. Practice has shown that various answers will be given; but eventually, if notation has been properly taught in the earlier standards, the right answer, 10, will be given. Proceed with other figures—111, 1111, and so on. Each figure of the same kind to the left is seen to be ten times its neighbour on the right. Do the same with other figures, as 22, 333, 7777, &c., till each scholar is perfectly familiar with the principle.

To each of these figures a name is given, as units, tens of units, hundreds of units, thousands of units, where the unit expresses a single thing, as an apple, a marble, a horse.

But the word *unit* may be used in a wider sense. It may include any number of objects, as five, ten, a hundred. Take 10 as the unit, and write on the blackboard—

10 × 1 = 10, which represents 1 unit.
10 × 10 = 100, „ „ 10 units.
10 × 100 = 1000, „ „ 100 units.

Next take 100 as the unit, and show that—

1,000 will stand for 10 units,
100,000 „ „ „ 1,000 units,

and so on. Do the same with 1,000 and 10,000 as the unit.

Now reverse the process. Take 10,000 and divide by 10, 100, 1,000, 10,000.

10,000 ÷ 10 will give 1,000 units with 10 as the unit.
10,000 ÷ 100 „ „ 100 units with 100 as the unit.
10,000 ÷ 1,000 „ „ 10 units with 1,000 as the unit.
10,000 ÷ 10,000 „ „ 1 unit with 10,000 as the unit.

From the above answers show that dividing by 10, there is one figure less in the quotient than in the dividend, and the answer is one-tenth of the dividend; dividing by 100, there are two less, and you get one-hundredth part of the dividend; dividing by 1000, there are three less, and you get a thousandth part of the dividend; dividing by 10,000, four less, and you get one ten-thousandth part of the dividend.

This division may be expressed in a simple way by placing a dot before the unit's figure, when we wish to divide by 10, as 10,000 ÷ 10 = 1000·0; before the ten's figure, when dividing by 100, thus 10,000 ÷ 100 = 100·00, and so on.

Next write a list of numbers on the board, and ask for their value with one as the unit, 10 as the unit, and 100 as the unit, &c., thus:—

642 = 642 units with 1 as the unit,
642 = 64 units with 10 as the unit,
642 = 6 units with 100 as the unit.

These may be written 642·, 64·2, and 6·42 where all the figures to the left of the dot are units, and all the figures to the right of the dot are parts of the unit.

Now take any number as 975314, and ask for its value. Divide it by 1,000, and write it thus—975·314.

Here 5 represents 5 units,
7 „ 7 tens of units, or 70 units,
9 „ 9 hundreds of units, or 900 units.

Of the figures to the right of the dot—

3 represents 3 tenths of the unit,
1 „ 1 hundredth of the unit,
4 „ 4 thousandths of the unit.

Give numerous examples on the blackboard, and let the value of each figure be named separately, thus: 94·68 = 9 tens of units + 4 units + 6 tenths of a unit + 8 hundredths of a unit.

729·8 = 7 hundreds of units + 2 tens of units + 9 units + 8 tenths of the unit.

·684 = 6 tenths of the unit + 8 hundredths of the unit + 4 thousandths of the unit.

Examples for practice, first orally, and then on slates.

1. What is the value of each figure in terms of the unit in the following numbers?

(1) 742, 9,813, 6,807, 26, 58,209.
(2) 3·6, 5·9, 4·1, 2·8, 9·5.
(3) 72·9, 46·3, 78·1, 57·26, 36·84.
(4) 5·861, 7·234, 8·209, 76·814.
(5) 426·8, 7·083, 2·604, 739·507.
(6) ·46, ·037, ·609, ·0359.
(7) ·009, ·00372, ·0009, ·62009.
(8) 537·002, 4675·2891, ·00009307.
(9) 42685·333001', ·426095, ·3075.
(10) 7329154, 4·06, 5000·0005, 1·0001.

Write on the blackboard, and have copied on the slates—

(*a*) If a dot is placed between any figures it shows that the figures to the left of the dot represent units, and the figures to the right of the dot represent parts of the unit.

(*b*) The first figure to the left of the dot represents so many units, and the value of the second is found by multiplying it by 10, of the third by multiplying it by 100, and so on.

(*c*) The value of each figure to the right of the dot may be found by dividing by 10, 100, 1,000, &c., according as it occupies the 1st, 2nd, 3rd, &c., place to the right of the dot.

(To be continued.)

Needlework for Pupil-Teachers.

BY MISS SOPHY LOCH,

Examiner of Needlework to the London School Board.

THE chemise is now complete, with the exception of being marked with the initials of the worker.

Marking in cotton is thought by many to be obsolete, and moreover perfectly unnecessary; but those who still continue this thrifty and ornamental way of distinguishing their linen from that of others, have in my opinion a distinct advantage over those who use marking ink (however good the latter may be) in point of durability, neatness, and general appearance. To discuss this question is not however at the present time my intention, but rather to describe one or two modes of marking in cotton for the sake of those who elect to adopt this latter course.

Some years back, what is called 'True marking' was in vogue, viz., marking which, when finished, looks the same on both sides. This *does* seem to me to be somewhat unnecessary labour, and is not much in use at the present time, the advantages *for* not appearing to be strong enough to overbalance the reasons *against*. There are different ways of producing this stitch. I give one or two drawings to illustrate one way.

True marking. First step:

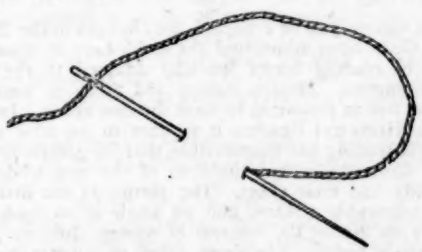

Fig. 18.

Second step:

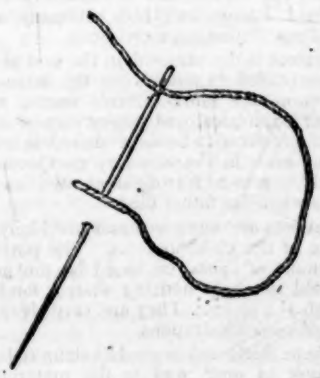

Fig. 19.

Third step:

Fig. 20.

The stitch will now be the same on both sides.

In working the ordinary marking stitch, the various points to be remembered are:—

1. The marking stitch is worked from left to right.

Fig. 21.

2. The *letter* itself, generally speaking, from right to left.

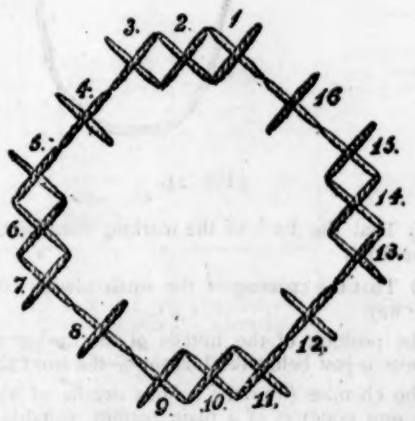

Fig. 22.

3. There must be no knots, and each letter must be fastened off in itself.

4. Capital letters must be seven stitches high, small ones five stitches; small letters, such as *h* or *l*, seven stitches high.

5. Four threads must be left between capital letters, and two between small ones.

6. Marking is *generally* done on the selfedge way of the material, but this rule is not invariable.

7. The *position* of the needle in marking *has to be varied* to suit the position of the next stitch. This constitutes one of the principal acts in marking, The following rules must be however observed :—

(*a*) That the stitch must never be crossed like the ordinary cross-stitch, thus :—

Fig. 23.

but thus—

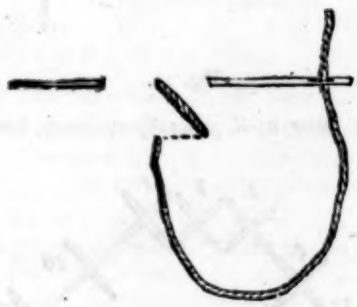

Fig. 24.

(*b*) That the back of the marking must be as neat as the front.

(*c*) That the crossing of the stitch always falls the same way.

The position of the initials of the worker on the chemise is just below the bottom of the front slit.

The chemise (into the various details of which I have now gone) is of a plain pattern, suitable for a Pupil-Teacher of the first year to make and wear herself. Embroidery on the neck and sleeves had better be added after the garment has been inspected. Many little details have been spoken of in treating of this garment, in a manner which some may think superfluous; but it is attention to these little details, trifling as they may seem, which makes the difference between a well or badly finished specimen of work.

(To be continued.)

Publications Reviewed.

Pitt Press Series: An Apologie for Poetrie. By Sir Philip Sidney. Edited, with notes, illustrations, and glossary, by Evelyn S. Shuckburgh, M.A. Cambridge: At the University Press.

We have here a thoroughly satisfactory edition of Sir Philip Sidney's famous work in defence of poetry. The introduction gives an interesting but concise account of Sidney's life, and his relations to the history of his time and to English Literature. The text, based on the first edition of 1595, has been most carefully revised after the collation of seven important editions. The extremely 'allusive' character of this remarkable example of almost the earliest modern English prose writing affords abundant scope for the annotator; and Mr. Shuckburgh has taken great pains to do justice to his opportunity. The notes and illustrations occupy more than one hundred pages of rather small type, and contain everything a student can desire or need to assist him in the understanding and appreciation of the text. Contemporary, or almost contemporary, authors are largely quoted from in elucidation of many of the points in Sidney's arguments, and no one can study the text and notes without obtaining a large fund of knowledge on the matters in question. The volume is well printed and neatly bound.

The Royal English History Readers: Simple Stories of English History for Standard II. Stories from Early English History for Sandard III. Stories and Biographies from 1066 to 1485. Standard IV. London and Edinburgh: T. Nelson and Sons.

As was only to be expected, the changes in the Education Code have stimulated the publishers to issue new sets of reading books specially adapted to the latest requirements. Messrs. Nelson and Sons, as usual, are to the fore in preparing to meet the new needs. In these three Historical Readers it appears to us, after a very careful reading and examination, that the greater freedom and more educational character of the new Code have already had their effect. The stories in the first book are admirably written, and we know of no book more likely to arouse the interest of young children in our country's history, nor more fitted to impress on their minds a fair outline sketch of that history. The second and third books treat of special periods in fuller detail and in a style suited to the Standards for which they are respectively intended. The admirable narrative is varied here and there by the insertion of suitable poems, mostly from Bernard Barton and Mrs. Hemans, and in the third book from Shakespeare and Scott.

A new feature is the removal to the end of each book of what are called 'exercises on the lessons.' These include lists of the more difficult words, explanatory notes on words, phrases, and proper names, and a short summary of the facts to be remembered in each lesson. We note one error in the summary on Queen Victoria: 'eight years' is printed for 'eight months' as the age of the princess when her father died.

The wood-cuts are numerous and are likely to add to the pleasure of the child-students. The portraits in the third book must of course be based on the imagination, but we could not help noticing what a family likeness runs through the series. They are very clear and striking as school-book illustrations.

Each volume fairly makes good its claim to be 'a reader and text-book in one,' and in the material points of paper, typography, and binding, the series is worthy of the publishers' well established reputation.

The 1891 Scholarship Examination.

BY DR. GEORGE BEACH, M.A.

Co-Author of 'A Manual of our Mother-Tongue,' Author of 'Elements of English,' 'Entertaining Readers.'

1. This week we will first dispose of a few points which have been referred to by correspondents numerous enough to justify us satisfying their requests in the body of this Article.

2. *The Infinitive Mood, its office and how to parse it.*
The Infinitive Mood is never a pure Verb. It always possesses in addition to its verbal nature, that of a Noun, an Adjective, or an Adverb.

Take the three following sentences:—

(*a*) '*To lie* is both deceit and theft.'
To lie Verb, Weak (Reg.), Intrans., Infin., Present, EQUAL TO A NOUN Subject to '*is*.' The infinitive may also be governed as 'He tried *to smile*.'

(*b*) 'A maiden there was none *to blame*, and very few *to love*.'
To blame—Verb, Weak (Reg.), Trans., Act., Infin., Present, gov. *maiden*, and BEING EQUAL TO AN ADJECTIVE qualifies *none*.
To love—Verb, Weak (Reg.), Trans., Act., Infin., Present, gov. *maiden*, and BEING EQUAL TO AN ADJECTIVE qualifies *few*.

(*c*) 'He fought *to prove* his power.'
To prove—Verb, weak, (Reg.), Intrans., Infin., Present, gov. *power*, and BEING EQUAL TO AN ADVERB, modifies *fought*.
'The Infinitive of purpose' is never governed, it modifies.

3. A favourite question is 'Explain the following passage of poetry as you would to the highest class of your school.'

First, take the difficult, or unfamiliar, or poetically used words and bring out their ordinary meaning. Note that in doing so to 'the highest class' their derivation should be utilised.

Second, place the passage in Prose Order, divesting it of any peculiar constructions and arrangements, and show why the reasons for the poetical order adopted, which will generally be either for emphasis or because of the exigencies of rhyme or rhythm.

Third, write out a rough Paraphrase, as much as possible employing phrases furnished by the scholars, and clinging more to the spirit and idea of the excerpt, than to its verbal sense and form.

4. Many otherwise good papers lose position through lack of finish, *e.g.*, on Parsing numerous instances like the following occur:—

Verb, Re trans Ind act,

in which ambiguous contractions (*Re*) are employed, commas (,) and abbreviation marks (.) are omitted, capitals are irregularly used, and a wrong and variable *order* of parsing employed. Another little point is, to denote Prefixes, thus per-, and Affixes thus -tion. All these appear small matters, but they make a great impression, and we mention them now in order that good habits may be formed; for let not our Readers think that they can save time now by slovenly work, and do quite differently at the 'Scholarship.'

5. *Sum* 24, *Exercise XXXV. p.* 192 *of Dixon and Beach's Girl's Arithmetic.*

If the 3 per cents. be at 96, how much must a person invest in order that he may derive from it a half-yearly interest of £77 13s. 4d. after paying 7d. in the £ for income tax.

Net half-yearly income = £77 13s. 4d.
∴ ,, yearly ,, = £155 6s. 8d.

But after paying 7d. in the £ or $\frac{7}{240}$ of the gross income, only $\frac{233}{240}$ of gross income is left

∴ Net Income = $\frac{233}{240}$ of Gross Income
∴ Gross ,, = $\frac{240}{233}$ of Net ,,
and in this case Gross Income = $\frac{240}{233}$ × £155 6s. 8d. =
$\frac{240}{233}$ × £$\frac{466}{3}$ = £160

The problem now reads thus 'If to get an Income of £3 I invest £96, what must I invest to procure an income of £160?'

Amount invested to procure income of £3 = £96
,, ,, ,, ,, £1 = £32
,, ,, ,, ,, £160 = £32 × 160
= £5,120. Ans.

6. The Science to be taken in order to secure extra marks, should be Physiography, Physiology or Hygiene. The Advanced Stage should be attempted, as it is easier to score a 'second class advanced' than a 'first elementary.' Physiography will assist with the Geography, and Physiology and Hygiene will help School-Management and Domestic Economy, but as a rule the Physiology paper is more hardly dealt with than the Hygiene.

7. After some correspondence with the Education Department respecting *Article* 41*f* of the late Code, the authorities decline to interpret, but fall back upon the alteration of the wording in the New Code now 'on the table' of the House of Commons. For particulars see page 110 of *Practical Teacher*.

8. *Correction.*—In the Dictation exercise of p. 110, the word tranquillity was spelt with only one *l*.

9. Next week, commencing March 30th, being Easter Week, only the ordinary routine will be set, but no questions. Our Students who have holidays are nevertheless recommended to work three hours a day but not more. This will scarcely encroach on the holidays, and will not be burdensome.

10. *La Jeune Sibérienne*, lines 5 to 10.
'But the people who knew her appear to regret that anyone should ascribe love adventures and romantic ideas to a young and noble maiden, who felt no other passion than that of the purest filial love, etc.'

11. In '*Practice*,' sums whose *answers* are weights and measures should not be neglected. It is very probable also that a question may be set upon the Metric System.

WEEK COMMENCING 23RD MARCH, 1891.

DAYS.	FIRST HOUR.	SECOND HOUR.	THIRD HOUR.
M.	Quadratic Equations *or* Rules for Health.	From 1848 to 1868.	Latin *or* French
TU.	First Book of Euclid *or* Calico Sampler	Sketch Maps of Victoria, New South Wales, and the Murray	Science
W.	Practice (with Theory)	Drawing	Composition and Tests of English Words
TH.	Quadratic Equations *or* Clothing and Washing	From 1868 to 1883	Latin *or* French
F.	Deductions on Euclid Book I. *or* Calico Sampler	General Geography of Australia	Science
S.	Work done by Mixed Agents	Repetition and Macaulay's Essay on Addison	The educational or utilitarian value of various subjects / Paraphrasing and Latin Roots

REMARKS ON ROUTINE.

(*a*) QUADRATIC EQUATIONS.
Hamblin Smith—(1) pp. 184 to 187, Examples xci. to xciv., sums 1, 5 and 6 in each.
(2) pp. 188 to 194, Examples xcv. to xcviii. sums 1 and 6 in first three examples, and sums 3, 9, 12, 15, 18, 21, in last example.

Charles Smith—(1) pp. 165 to 170, Examples xlv. and xlvi., sums 5, 10, 15, 20, 25, 30, in each.
(2) pp. 183 to 189, Examples xlix. and l., sums 4, 8, 12, 16, 20, in each.
Todhunter—(1) pp. 171 to 181, Examples xxvii. and xxviii., sums 6, 9, 12, 15, 18, in each.
(2) pp. 182 to 187, Examples xxix. and xxx. sums 6, 9, 12, 15, 18, in each.

(*b*) EUCLID.
Deighton—(1) pp. 70 to 82. (2) p. 70, Ex. 1 and 4; p. 80, Ex. 2 and 3; p. 84, Ex. 17 and 18.
Todhunter—(1) pp. 44 to 52. (2) p. 348, Ex. 99, 100, and 102; p. 350, Ex. 125, 126, 127.
SCOTCH CODE.—Prop. 18 to 26 of Book III. in addition.

(*c*) ARITHMETIC.
Pendlebury—(1) pp. 175 to 181, study the theory. (2) pp. 264 to 269, Ex. clxx. to clxxii., sums 1 and 6 in each.
Hamblin Smith—(1) pp. 156 to 161, study the theory. (2) Examination papers, sums 150, 232, 344, 370, 378, and 439.
Barnard Smith—(1) pp. 156 to 161, study the theory. (2) Miscellaneous questions and examples, p. 284, sum 5; p. 286, sum 5; p, 288, sum 11; p. 292, sum 5; p. 294, sum 5; p. 295, sum 7.
Dixon and Beach—(Females) (1) pp. 56 to 66, study the theory. (2) pp. 131 to 135, Ex. xxv. sums 2, 4, 6, 8, 10, 12.

(*d*) HISTORY.
Sanderson—(1) pp. 385 to 397. (2) pp. 397 to 409.
Ross—(1) pp. 446 to 457. (2) pp. 457 to end.
SCOTCH CODE.—The Norman Dynasty.

(*e*) GEOGRAPHY.—(1) Map.
Moffatt and Paige.—(2) pp. 192 to 197.
Anderson.—(2) pp. 200 to 205.
SCOTCH CODE.—Physical Geography of Islands and Lakes in addition.

(*f*) ENGLISH.
(1) Write an essay upon '*A Ship on Fire*,' and thoroughly master p. 173 of '*Dr. Beach's English*.'
(2) Revise Latin Roots, and paraphrase the following :—

Hadst thou *but* lived, though *stripped* of power,
A *watchman* on the lonely tower,
Thy thrilling trump had roused the land,
When fraud or danger *were* at hand;
By thee, *as* by the beacon light,
Our pilots had kept course aright,
As some proud column, though *alone*,
Thy strength had propped the *tottering* throne;
Now is the stately column broke,
The beacon light is *quenched* in smoke,
The *trumpet's* silver sound is *still*,
The warden *silent* on the hill.

(*g*) LATIN.—Read Mr. Huxley's Article, and chapters 13 to 18 of '*De Bello Gallico*.'

FRENCH.—Professor Darqué's Course, pp. 80 to 85, and pp. 20 to 26 of '*La Jeune Sibérienne*.'

(*h*) SCHOOL MANAGEMENT.
Read up in your Manual, the educational value and practical value of the ordinary subjects taught in an elementary school.

(*i*) DOMESTIC ECONOMY (*Females*).
Hughes's Domestic Economy, pp. 191 to 197.

SELECTED GOVERNMENT QUESTIONS.

1. Find two numbers whose sum is 22 and the sum of their squares is 250. Ans. 13 and 9.

2. (*a*) Simplify $\frac{1}{x-y} - \frac{2x}{x^2-y^2} - \frac{3x^2}{x^3-y^3}$.
Ans. $\frac{y^2-4x^2-3x^2y}{(x+y)(x^2-y^2)}$.

(*b*) Solve $\frac{13}{2x-1} - \frac{10}{3x-1} = \frac{1}{2}$. Ans. $x = \frac{1}{2}$.

3. Work out the following as you would do on the blackboard before a class which knew how to find the interest, when the principal, rate and time are given :—
At what rate per cent. per anuum will £450 amount to £453 in 4 months? Ans. 2 per cent.

4. The true discount on a sum due 18 months hence at 4 per cent. per annum is £22 0s. 3d. What is the sum?
Ans. £388 17s. 9d.

5. Express $\frac{3}{17}$ as a decimal, and find the value of £1·285 — 5·115 shillings + 6·92 farthings. Ans. ·297; £1 0s. 8$\frac{3}{4}$d.

6. (*a*) If a side of a triangle be produced, the exterior angle is equal to the two interior and opposite angles; and the three interior angles of every triangle are equal to two right angles.
(*b*) SQT is a triangle right-angled at Q. From S, on the side remote from T, a straight line SP is drawn perpendicular and equal to SQ. A similar straight line is drawn perpendicular and equal to TQ. Show that the points PQR lie on the same straight line.

7. (*a*) The opposite sides and angles of parallelograms are equal to one another, and the diameter bisects them, that is, divides them into two equal parts.
(*b*) Given the middle points of the sides of a triangle to construct it.

8. (*Scotch Code.*)—(*a*) The diameter is the greatest chord of a circle, and of all others the chord which is nearer the centre is greater than one more remote.
(*b*) P is a point inside a circle whose centre is O, prove that the chord which is at right angles to OP is the shortest chord that can be drawn through P.

9. Mention some of the particulars in which you think great progress (legislative or otherwise) has been made in the 50 years of Her Majesty's reign.

10. For what events are the years 1842, 1846, 1854, 1857, and 1867 noteworthy.

11. (*Scotch Code.*)—Contrast the characters of William I. and William II.

12. Draw a rough map (putting in one line of latitude and one of longitude) of Western Australia.

13. Describe the climates, briefly, of the various Australian provinces.

14. (*Scotch Code.*)—Name the different kinds of lakes and islands, giving instances.

15. What is the best method of examining a class? What kinds of questions should be avoided?

16. Parse the words italicised in the Paraphrasing extract (English f 2).

17. How would you conduct a Dictation lesson to Standard III.? How should the mistakes be corrected?

18. Translate :—
Interea ea legione, quam secum *habebat*, militibusque, qui ex provincia *convenerant*, a lacu Lemanno (qui in flumen Rhodanum influit) ad montem Juram (qui fines Sequanorum ab Helvetiis dividit) millia passuum decem novem murum, in altitudinem pedum sedecim, fossamque perducit. *Eo opere perfecto*, praesidia disponit, castella communit, *quo facilius*, si se invito transire conarentur, prohibere possit; *or*
'Hélas!' lui répondit son père en versant des larmes, 'crois-tu, pauvre enfant, que *l'on puisse parler* à l'empereur comme tu parles à ton père en Sibérie? Des sentinelles gardent de toutes parts les avenues de son palais, et tu ne pourras jamais *en passer* le seuil. Pauvre et mendiante, sans habits, sans recommandations, comment oseras-tu paraître, et qui daignera te présénter?'

19. Parse the words italicised in Question 18.

CORRESPONDENCE.

NEMO.—When necessary, we will attempt to do so

THOM BASSET.—*One* of each only.

WOOLER.—We will deal very fully with this question in an early number.

SIOPWR MAWR.—Your wishes shall be met if possible. Cambridge University Press.

Z.—Your questions should be replied to fully, but you can easily get the information from any respectable Grammar. If you fail, ask us again.

(To be continued.)

INSPECTION OF A BOARD SCHOOL.

Writing.

STANDARD I.

Copied from Isbister's 'Natural History Reader.' 'Now my tongue is quite as good to wash with as if I had water, and a cloth, or a sponge.'

STANDARD II.

'When the whale is dead, the sailors put its fat, called blubber, into casks, and bring it home, to be made into oil. Whalebone, which comes from its jaws, is used in making umbrellas; . . . . and part of one kind of whale, called the sperm whale, is used for making candles.'

STANDARD III.

'Among the rest came some of his former riotous companions, expecting, no doubt, to be made at once the King's chief favourites. But they were mistaken. The King told them that he had given up his foolish ways, and advised them to do the same. Nor would he let them come about his person, until they had shown that they had learned better manners.'

STANDARD IV.

'The schoolmaster lighted a candle, fastened the window-shutter, and closed the door. But after he had done this, and sat silent a little time, he took down his hat, and said he would go and satisfy himself, if Nell would sit up till he returned. The child readily complied, and he went out. She sat there half an hour or more, feeling the place very strange and lonely, for she had prevailed on her grandfather to go to bed, and there was nothing to be heard but the ticking of the old clock.'

STANDARD V.

The following extract from the *Standard* was given to a part of Standard V.

'Uncertainty, indeed, is said to be the great charm of cricket, and it would be unreasonable to assume that this element would be absent from the trial game. We should be glad to see a sound and well-considered scheme of promotion established in county cricket, because it would be good for the game and good for individuals.'

The following story was read twice:—

'One day when Napoleon was reviewing some of his troops, the bridle of his horse slipped from his hand, and the animal galloped off. A common soldier rushed out of the ranks, and seizing the bridle, led the horse back to the Emperor, who turned to him and said: "Well done, captain." "Of what regiment, sire?" said the soldier. "Of the Guards," replied Napoleon, pleased with the soldier's instant belief in his word. The Emperor rode off; but the soldier threw down his musket, and though he had no epaulets on his shoulders, no sword by his side, nor any mark of his promotion but the word of the Emperor, he ran and joined the staff of commanding officers. They laughed at him and said, "What have *you* to do here?" He replied, "I am captain of the Guards." They were amazed; but he only added, "The Emperor called me captain of the Guards, and therefore I am so." No one could now dispute his rank; and by his subsequent career he fully proved himself worthy of his instantaneous advancement.'

STANDARDS VI. AND VII.

Write all you can about one of the following:—

1. A Magic Lantern.
2. A Day's Fishing.
3. A Visit to the Country.
4. The Spanish Armada.
5. How to clean a Parlour. (Girls only.)

Mental Arithmetic.

STANDARDS VI. AND VII.

Take 17s. 8d. from 30s. I spent 6s. 5d. and 4s. 1d. out of 30s. What left? If 12 herrings cost 3d., what will 960 cost? If I sold $\frac{2}{3}$ of $\frac{3}{4}$ of my share of a ship, what part have I left? Take $\frac{1}{3}$ from 1·5, Reduce $\frac{7}{10}$ to a decimal. Bring $18\frac{3}{4}$ to an improper fraction. Bring ·075 tn a vulgar fraction. Divide ·072 by ·36. Multiply $\frac{5}{8}$ by $3\frac{1}{3}$. Find the value of ·75 of £5. A boy does $\frac{1}{2}$ of a piece of work in a day, how long will it take him to do two such pieces? Gained 3d. on 2s. What rate per cent. profit do I make? Multiply 6·5 by ·01. Reduce 3s. 4d. to the decimal of £5.

STANDARD V.

Divide $\frac{1}{2}$ of 10,000 by 50. How many yards in 10 chains? Find the cost of 6,000 fourpenny books. What will $2\frac{1}{2}$ dozen oranges cost at $2\frac{1}{2}$d. for 5? Reduce $\frac{1}{4}$ of a mile to feet. Take $\frac{3}{8}$ of a dozen from a score. Which would you prefer, $\frac{1}{4}$ or $\frac{5}{24}$ of a £5 note? Why? Take $\frac{1}{8}$ from $\frac{1}{4}$. If 2 tons of coal cost £1, what will 2 cwt. cost? Find the G.C.M. of 12 and 30. What will 18 suits cost at £2 10s. each? To $\frac{1}{4}$ add $\frac{1}{3}$. What fraction of 10s. is 10d.? (Inspector required pupils to work out fully all answers to above questions.)

STANDARD IV.

No Mental Arithmetic given to this Standard.

STANDARD III.

How many pence in 17s. 6d.? Divide 50,505 by 5. How many $\frac{1}{2}$ dozens in a gross? How many months in 48 weeks? How many half-crowns in £10? Bring 12 miles to furlongs. Divide 1s. 6d. exactly among 12 boys. How many pounds in 2058.? 59 × 7. How many $\frac{1}{2}$ ozs. in a pound? What is the length of a yard in inches? How many days in a leap year? What is $\frac{1}{3}$ of 15d.? How many sixpences in £2 10s.? What number of 3d. stamps for 5s.? What is a chain in length? How many minutes in 5 hours? How many shillings in £3 17s.? 12 × 9 — 8 ÷ 10.

STANDARD II.

What will 6 books cost at 9d. each? How many farthings in 1s. 1d.? A man bought 100 toys at 2 a penny, how much? How many sixpenny knives for £1? Multiply 15 by 8 and subtract 15. Add $4\frac{1}{2}$d. and $5\frac{3}{4}$d. together, How many threepenny books for 5s.? How many must I add to 34 to make it 42? Find the cost of 8 rabbits at 11d. each. How many days in 9 weeks? Divide 4 dozen by 6.

What number of shillings in 89 pence? How much is a sovereign and half-a-guinea? Take 9 from 5 × 6. 30 + 4 + 5 + 9 + 7. How many pence in 8s. 5d.? What number multiplied by 7 comes to 21?

STANDARD I.

How many penny eggs for 3 threepences? How many marbles for 6d. at 5 for a penny? 12 horses in each of 6 fields, how many in all? Two dozen oranges at a penny each? Share 2d. among 4 boys. How many sixpences in half-a-crown? How many legs have 12 horses? If I get 10 nuts for ½d., how many for 2d.? If I spent 4d. out of 9d., what remained? How many wings have 4 hens and 5 chickens? If slate pencils cost ½d. for 6, how many for 1½d.? I spent 4½d. and 2½d., how much was that? 4 × 10; 6 × 7; 8 × 3; 7 × 4; 5 × 11; 6 × 12; 3 × 9.

Geography.

STANDARD VII.

Largest seaport in United States? Say all you can about it. Name an island close to New York. What town is on it? What islands are south of Florida? Where is Yellowstone Park? Say what you could see there. Name the boundaries of the Mississippi basin? What dangerous animals live in this river? Now its tributaries? Capital of the States? Name some large buildings in Washington. What is exported from New Orleans? Name the rivers flowing into the Pacific. Name the chief things held in solution by sea-water. What do you mean by taking soundings? What do you know about the bottom of the Atlantic Ocean? Where is the sea most salt? Why? What seas have hardly any tides? How is this? Are tides of any use? Why? Explain why we have two tides a day. When do we have Neap tides? What is a bore? Describe one.

STANDARD V.

How many seasons are there? What causes them? Why do we have so little daylight now? What is an axis? Name the lines which get shorter as you go near the poles. (Lines of Latitude.) Why is this? What is a degree? How fast does the sun travel? When is the sun on the meridian of Greenwich? How often in a day? In what direction does the sun appear to travel? Suppose it is 12 o'clock at Greenwich, what time will it be at a place 45° east? Why? Where is Switzerland? In what respects is it different from all the other countries in Europe? What is a glacier? What rivers drain Switzerland? Name the Swiss lakes. What kind of a climate has Switzerland? How are the people occupied? Name the manufactures. Where is Brest? Now the rivers of France. Describe the course of the Rhone. What towns are on the Loire? Where are the Landes? What are they? Name the chief manufactures of France. Say what you can about Rouen. Where is the Iron Gate? Describe the course of the Danube. Where is Cracow? For what famous? Ports of Austria? Why so few? What minerals are found in Austria? What is the character of the Austrians?

STANDARD III.

Where is Winchester? For what noted? Name some towns in the Isle of Wight. Now some capes there. Where is the New Forest? Who made it? Say something about Portsmouth. What could you see at Aldershot? Where is Dartmoor? Capital of Devon? Largest town in Devon? For what is Plymouth noted? What is manufactured at Axminster? What minerals are found in Cornwall? What are pilchards? Where caught? Where is Rugby? What railway runs through it? What is manufactured at Coventry? Name the different kinds of iron goods made in Birmingham. What towns are in the Potteries? Now all the towns you know in the Black Country. What railway ends in North Wales? How many bridges cross the Menai Strait? For what is the county of Glamorgan famous? What are the people of Aberdare engaged in? What towns in England are noted for their rapid growth? What is meant by the Metropolis?

STANDARD I.

Inspector called a boy to the front, made him face class, then asked class in what direction was he looking. Which is the south door of school? Point to the windows through which the sun shines at nine o'clock. Where is the sun then? Suppose the wind is blowing from the west, in what direction will the smoke go? Point out on plan where you are sat. Now show where the window is through which the sun shines at nine o'clock. Point out playground. Now the stove. What is this (pointing to mariner's compass)? What is the little needle made of? What does the needle do? What is at the bottom of the box? How can I find the south with this compass? What does the blue colour on this map stand for? Point out a town. How are they marked? How are rivers marked? Point out some coast.

(To be continued.)

NEW INSPECTION QUESTIONS—*contd.*

No. 18.

Write—The boy said, 'Mother, I will do what you ask.'

(1)	(2)	(3)
334	968	From 717
946	27	Take 419
783	4	
469	869	(4) From 6,201
837	62	Take 4,909

No. 19.

Write—Once a noble dog saved the life of a young child.

(1)	(2)	(3)
838	492	From 9,123
92	7	Take 3,768
9	68	
46	384	(4) From 333
798	99	Take 144

No. 20.

Write—England expects every man to do his duty.

(1)	(2)	(3)
946	731	From 7,001
73	94	Take 1,007
8	167	
72	42	(4) From 6,010
109	159	Take 3,011

No. 21.

Write—He told her of the North and South winds.

(1)	(2)	(3)
685	406	From 601
498	73	Take 106
73	9	
9	8	(4) From 990
594	764	Take 99

No. 22.

Write—'Ah well!' said the lad, 'there is no help for it.'

(1)	(2)	(3)
649	738	From 701
83	93	Take 19
5	7	
76	46	(4) From 440
297	237	Take 44

No. 23.

Write—'Oh, that is a very poor look out!' said the fox.

(1)	(2)	(3)
698	301	From 290
274	76	Take 66
865	9	
79	467	(4) From 864
483	129	Take 47

No. 24.

Write—Kate was a little girl who was fond of feeding birds.

(1)	(2)	(3)
709	671	From 440
87	98	Take 44
4	9	
96	47	(4) From 707
129	136	Take 77

No. 25.

Write—Of all the birds she liked the robin best.

(1)	(2)	(3)
946	703	From 1,016
85	98	Take 917
47	7	
368	684	(4) From 7,017
59	296	Take 119

No. 26.

Write—Parrots often pick up words which they hear.

(1)	(2)	(3)
649	376	From 401
875	91	Take 9
397	8	
246	47	(4) From 376
858	195	Take 197

No. 27.

Write—What shall I give you, my man?

(1)	(2)	(3)
694	736	From 710
275	479	Take 94
96	84	
468	96	(4) From 408
279	848	Take 19

No. 28.

Write—The parrot said, 'Give the man a penny.'

(1)	(2)	(3)
904	348	From 701
86	96	Take 199
275	27	
947	839	(4) From 660
23	42	Take 66

No. 29.

Write—I will tell you a secret about the farm.

(1)	(2)	(3)
417	394	From 524
86	73	Take 236
193	816	
468	17	(4) From 101
129	469	Take 9

No. 30.

Write—'How will you get in?' said the wolf.

(1)	(2)	(3)
294	378	From 990
67	94	Take 99
8	6	
73	673	(4) From 601
146	169	Take 204

ANSWERS.

No. 1.	No. 2.	No. 3.
1. 2,357.	1. 2,198.	1. 3,492.
2. 3,338.	2. 3,611.	2. 3,502.
3. 2,847.	3. 993.	3. 5,839.
4. 633.	4. 396.	4. 792.
No. 4.	**No. 5.**	**No. 6.**
1. 1,834.	1. 2,735.	1. 3,602.
2. 3,368.	2. 2,300.	2. 2,947.
3. 5,904.	3. 289.	3. 882.
4. 491.	4. 1,091.	4. 174.
No. 7.	**No. 8.**	**No. 9.**
1. 3,245.	1. 2,928.	1. 2,963.
2. 3,851.	2. 3,213.	2. 2,363.
3. 99.	3. 1,999.	3. 4,995.
4. 6,299.	4. 188.	4. 399.
No. 10.	**No. 11.**	**No. 12.**
1. 3,156.	1. 1,893.	1. 3,425.
2. 1,690.	2. 613.	2. 2,162.
3. 455.	3. 450.	3. 192.
4. 2,297.	4. 1,192.	4. 86.
No. 13.	**No. 14.**	**No. 15.**
1. 608.	1. 2,384.	1. 3,310.
2. 2,794.	2. 2,708.	2. 1,470.
3. 166.	3. 125.	3. 1,198.
4. 1,906.	4. 2,018.	4. 285.
No. 16.	**No. 17.**	**No. 18.**
1. 1,960.	1. 2,179.	1. 3,369.
2. 3,396.	2. 2,301.	2. 1,930.
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